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SHELF TALKER HAVING SHORT AND LONG TERM INFORMATION

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SHELF TALKER HAVING SHORT AND LONG TERM INFORMATION

FIELD OF THE INVENTION

The present invention relates to shelf talkers and shelf talker
5 display systems.

BACKGROUND OF THE INVENTION

Retailers are increasingly turning to electronic shelf label (ESL)
systems to handle the price changing needs in their stores. Along with ESL
10 systems, integrated within the shelf rails, are the use of larger shelf talkers used to
attract the customers attention by portraying a special item or price. US
5,448,226, issued September 5, 1995 to Failing, Jr., et al. shows such a system
where a shelf talker is placed at a location where an item is on sale or of special
interest to the customer. Failing refers to the shelf talkers as cards or printed
15 material attached at a particular item location. Failing claims a management
system whereby a shelf talker is detected upon insertion into an ESL, indicating to
a database that a shelf talker has been deployed at that location.

The shelf talker disclosed by Failing is a printed card that must be
removed and a new card printed when the information to be displayed, such as the
20 item price, changes. This process is not only costly from a printing standpoint,
but also labor intensive.

US 5,771,005, issued June 23, 1998 to Goodwin, III discloses a
shelf talker that is described as an auxiliary display attached to an ESL. It
electrically connects to the ESL by way of a connecting header and associated
25 rows of connector pins. Goodwin's auxiliary display is described as an LCD with
silk screening for color. One problem with using a conventional LCD display is
the thickness of the display. Goodwin illustrates his LCD displays as rather thick
allowing for the glass layers customarily found in liquid crystal displays. In one
claim, Goodwin even describes two displays back-to-back and protruding
30 orthogonally from the ESL. This makes for a very thick and rigid display jutting
out from the ESL making it susceptible to breakage due to collisions from carts

and customers. Conventional LCD displays also need continuous power in order to display the information thereby consuming the power in the battery provided with the shelf talker.

Another problem with the shelf talker disclosed by Goodwin is that
5 the static information, such as UPC and other long term product information is screen printed on the auxiliary display. It is not convenient for stores to custom screen print their own shelf talkers to match the items and special pricing information.

There is therefore a need for an improved shelf talker that avoids
10 the problems noted above.

SUMMARY OF THE INVENTION

The need is met according to the present invention by providing a shelf talker for displaying short and longer term information that includes a
15 backplane including a plurality of electrical conductors; a plurality of single character display chips mounted on the backplane in electrical contact with the electrical conductors for displaying the short term information; and a graphic overlay located over the backplane bearing the longer term information and defining apertures for displaying the short term information displayed by the
20 character chips.

ADVANTAGES

The shelf talker of the present invention can be provided as a thin flexible electronically writable shelf talker that is easily manufacturable by picking and placing the single bistable liquid crystal character chips on a flexible
25 back backplane. The chips require no additional power once written and the shelf talker maintains the display of information until written again. The advantage of the individual character chips is that they can be manufactured in quantity prior to the design of the backplane of the shelf talker, and later placed on a custom fabricated back plane to yield any one of a number of different configurations for
30 the shelf talker.

The printable graphic overlay that is adhered to the backplane, which can be printed locally and may have long term static information such as store icons, UPC, static text and other product or non-product related information. This provides a simple way to address the needs of retailers who desire varying
5 formats on their shelf talkers, whether product specific or generic, with no effect on the fabrication of the characters. A large variety of shelf talker layouts can be designed and only the backplane and trace paths need to change. Manufacturing of the bistable character display chips are independent of any layout configuration. Short term information such as price changes, cost per unit, and savings
10 information can be changed electronically by way of an electronic writer.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a top view of a single character display chip according to the present invention;

15 Fig. 2 is a cross sectional view of a single character display chip taken along lines 2-2 in Fig. 1;

Fig. 3 is a top view of a backplane used with the single character display chips according to the present invention;

20 Fig. 4 is a top view of a completed shelf talker according to the present invention;

Fig. 5 is a perspective view of a shelf talker writer used to electrically change the short term information according to the present invention;

Fig. 6 is a cut-away view of the shelf talker writer of Fig. 5;

25 Fig. 7 is a cross sectional view of the shelf talker taken along lines 7-7 of Fig. 6;

Fig. 8 is a partial an enlarged view of Fig. 7 showing the electrical contacts used to write to the shelf talker; and

Fig.9 is a schematic block diagram of a shelf talker system according to one embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Figs. 1 and 2, a single character display chip **10** is constructed by forming a conductive common electrode layer **14** on a substrate **12**. A layer of bistable liquid crystal material **16** is deposited, for example by roll coating, on the conductive common electrode layer **14**, leaving an exposed area of layer **14** for making electrical contact. Electrically conductive character segments **18** are then formed, for example by thick film printing on the bistable liquid crystal layer **16**. The character segments **18** may be arranged, for example to produce numeric characters 0-9 as well as a slash, a decimal point, a dollar sign, and a cent sign. The optical state of the bistable liquid crystal material between the character segments **18** and the common electrode layer **14** can be changed by selectively applying drive voltages to the character segments and the common electrode layer **14**. Once the optical state bistable material has been changed, it remains in that state indefinitely without further power being applied to the electrodes. The single character display chip can be made as shown for example in USSN 10/134,185, filed April 29, 2002 by Stephenson et al., which is incorporated herein by reference.

Referring to Fig. 3, a backplane generally designated **25**, comprises a flex circuit substrate **27** on which conductive traces **35** are formed. An insulator layer **40** is formed over conductive traces **35**. Exposed contact pads **30** at the top of the backplane **25** are used for electrical contact to a writing device. Additional exposed contact dots **45** in the insulator layer **40** provide electrical contact locations with the conductive traces **35** to contact the printed conductive character segments **18** of single character display chip **10**. The single character display chips **10**, several of which are shown attached to the backplane **25**, are attached by conductive adhesive between contact dots **45** and the printed conductive character segments **18** of single character display chip **10**. The conductive adhesive can be applied as individual spots, or as a single layer of anisotropically conductive adhesive as is known in the art.

Fig. 4 shows a completed shelf talker **65**. A printable graphic overlay **50** is attached to the backplane **25** with an adhesive backing **55** on the

backside of the printable graphic overlay 50. Openings 58 are provided in the printable graphic overlay to expose the single character display chips 10. Long term printed information 52 such as a store logo and other information may be pre-printed on the graphic overlay 50.

5 A shelf talker writer 70 shown in Fig. 5 is used to electrically change the short term information on the single character display chips 10 of shelf talker 65. The shelf talker writer 70 is electrically connected to a power supply and database having short term pricing information. The shelf talker 65 is inserted into slot 95 of writer 70 with the contacts 30 of shelf talker 65 facing downward.

10 In a cut-away of the shelf talker writer 70, Fig. 6 shows a slot 95 with alignment edges 98 and positioning surfaces 85. Also shown is a shelf talker presence sensor 100 which provides an electrical signal to indicate the presence of a shelf talker 65, which then drives the roller drive system 90 to move the shelf talker 65 downward into the shelf talker writer 70. A second home sensor 101
15 provides an electrical signal to indicate a seated position of edges 60 of shelf talker 65 to positioning surfaces 85 of writer 70, which in turn shuts off the roller drive assembly 90. The shelf talker writer 70 includes a circuit board 75 with contact pads 80 aligned with contacts 30 of the shelf talker 65. Circuit board 75 includes a drive circuit 82 that supplies drive signals to the contact pads 80. The
20 drive circuit is supplied with write data via a serial port 84 from an external source such as a personal computer as described below.

 Fig. 7 shows a partial cross section from Fig. 6 with a shelf talker 65 seated in position. An enlarged view of the interface area in Fig. 8 shows the contact pads 30 of shelf tag 65 in position adjacent to the contact pads 80 of
25 circuit board 75. Once shelf talker 65 is seated on positioning surfaces 85, a solenoid 105 drives block 110 forward creating firm contact between contact pads 80 and contacts 30 of the shelf talker 65. Electrical signals are then sent to change the short term information on single character display chips 10. After the writing process is completed, the roller drive assembly drives the shelf talker 65 upward
30 to the original inserted position for the store clerk to remove. Once written, the

shelf talker **65** can be attached to any shelf pricing system by way of a clip as is known in the art.

Referring to Fig. 9, a shelf talker system using a shelf talker of the present invention includes a database transceiver **175** that sends information
5 derived from a central database computer **180**, to a personal computer transceiver **160** in the portable personal computer **140**. Commands from the keyboard interface **155** and shown on the display **145** are sent to the shelf talker writer **70** by way of the laptop central processing unit **150** through communication cable **170**. Power **130** is supplied to the shelf talker writer through power cable **135** to circuit
10 board **75** for powering the sensors **100** and **101**, roller motor drive **90**, solenoid **105**, and a digital camera **126** located in the shelf talker writer **70**. Upon writing the shelf talker **65**, the digital camera **126** sends an image back to the portable personal computer **140** through communication cable **170** where character recognition software compares the actual written characters to the database. If the
15 data is inconsistent, an error message is posted on display **145**.

Also shown in Fig. 9 is a printer **185** used to print long term information **52** on shelf talker **65**. The data originating from the central database **180** is sent to the portable personal computer **140**, which then sends the data to the printer **185**. The printing of long term information can thus be done locally and
20 customized with individual store related information.

The invention has been described in detail with particular reference to certain preferred embodiments thereof, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention.

PARTS LIST

10	single character display chip
12	substrate
14	common electrode layer
16	bistable liquid crystal
18	electrically conductive character segments
25	backplane
27	flex circuit substrate
30	backplane contact pads
35	conductive traces
40	insulator layer
45	contact dots
50	printable graphic overlay
52	long term printed information
55	adhesive backing
58	opening in printable graphic overlay
60	shelf talker edge
65	shelf talker
70	shelf talker writer
75	circuit board
80	circuit board contact pads
82	drive circuit
84	serial port
85	positioning surfaces
90	roller drive system
95	slot
98	slot edge
100	presence sensor
101	home sensor
105	solenoid
110	block
126	camera

130	power
135	power cable
140	portable personal computer
145	display
150	central processing unit
155	keyboard interface
160	personal computer transceiver
170	communication cable
175	database transceiver
180	central database computer
185	printer